



of thorectolide monoacetate **1**. We noticed a missing signal assigned to the acetate methyl at  $\delta$  2.14 (20.4) and the shielding of the signal of H-25 at  $\delta$  6.15. Hence, thorectolide **2** appeared to be the desacetyl derivative of **1**. This conclusion was entirely substantiated by the HMQC and HMBC experiments (see Table 1). Hydrolysis of thorectolide monoacetate **1** yielded thorectolide **2**, identical (TLC,  $^1\text{H}$  NMR and mass spectra) with the natural product **2**.

Recently, three new manoalide-related sesterterpenes co-occurring with manoalide have been isolated from the marine sponge *Fasciospongia* sp.<sup>11</sup> These compounds called fasciospongides A, B and C also possess an original variation of the alkyl chain attached to the  $\gamma$ -hydroxybutenolide moiety. In the sample of *Hyrtios* sp. studied here, manoalide was not detected.

Thorectolide monoacetate **1** exhibited the same cytotoxic activity against KB cells as did manoalide ( $\text{IC}_{50} = 0.3 \mu\text{g ml}^{-1}$ ), while thorectolide **2** was much less active ( $\text{IC}_{50} = 5.3 \mu\text{g ml}^{-1}$ ). Only thorectolide **2** exhibited inhibitory activity of both HIV-1 nucleocapsid and integrase at 10 and 20  $\mu\text{g ml}^{-1}$ , respectively. In a preliminary assay using a colorimetric

column chromatography to afford thorectolide monoacetate **1** (0.004% dry weight) and thorectolide **2** (0.0006% dry weight).

**Thorectolide Monoacetate 1.**—Pale yellow oil,  $[\alpha]_{\text{D}}^{22} = +33.8^\circ$  (c 0.49,  $\text{CHCl}_3$ ) (Found:  $[\text{M}]^+$ , 458.26684,  $\text{C}_{27}\text{H}_{38}\text{O}_6$  requires  $M$ , 458.26684,  $\delta_{\text{H}}$  (330.13 MHz,  $\text{CDCl}_3$ ) 6.08 (d,  $J = 1$  Hz, H-2), 4.76 (ddd,  $J = 4, 9, 1$  Hz, H-4), 2.29 (H-5), 5.67 (br s, H-6), 2.10 (H-8), 2.12 (H-9), 5.06 (m, H-10\*), 1.95 (m, H-12\*), 2.05 (H-13\*), 5.06 (m, H-14\*), 1.95 (m, H-16\*), 2.05 (H-17\*), 5.06 (m, H-18), 1.64 (H-20), 1.57 (3  $\text{CH}_3$ -21-22-23), 5.27 (s, H-24), 7.05 (s, H-25), 2.14 (H-27);  $\delta_{\text{C}}$  (75.45 MHz,  $\text{CDCl}_3$ ) 169.3 (C-1), 118.5 (C-2), 165.6 (C-3), 61.5 (C-4), 28.2 (C-5), 120.2 (C-6), 137.3 (C-7), 31.7 (C-8), 25.7 (C-9), 123.1 (C-10\*), 134.7 (C-11), 39.7 (C-12\*), 26.5 (C-13\*), 123.8 (C-14\*), 135.6 (C-15), 39.6 (C-16\*), 26.4 (C-17\*), 124.1 (C-18), 131.0 (C-19), 25.4 (C-20), 15.9 (C-21), 15.8 (C-22, C-23), 91.3 (C-24), 92.6 (C-25), 168.9 (C-26), 20.4 (C-27) (Assignments marked \* may be interchanged with closest values).

**Thorectolide 2.**—Colourless oil,  $[\alpha]_{\text{D}}^{22} = +37.6^\circ$  (c 0.13,  $\text{CHCl}_3$ ),  $\text{C}_{26}\text{H}_{36}\text{O}_5$ ;  $m/z$  (%) 416 (10,  $\text{M}^+$ ), 398 (48), 380 (10), 355 (24), 329 (24), 283 (24), 269 (31), 247 (33), 229 (40), 215 (97), 203 (69), 137 (36), 81 (60), 69 (100);  $\nu_{\text{max}}/\text{cm}^{-1}$  (KBr) 3434, 1745, 1664, 1117, 604; for  $\delta_{\text{H}}$  and  $\delta_{\text{C}}$  see Table 1.

**$\text{NaBH}_4$  Reduction of 1.**—A solution of **1** (5 mg) in EtOH (3 ml) was reduced with  $\text{NaBH}_4$  (2 mg) by stirring for 1 h at  $0^\circ\text{C}$ . Excess reagent was destroyed by dropwise addition of 2% HCl until hydrogen evolution had ceased. The product was partitioned